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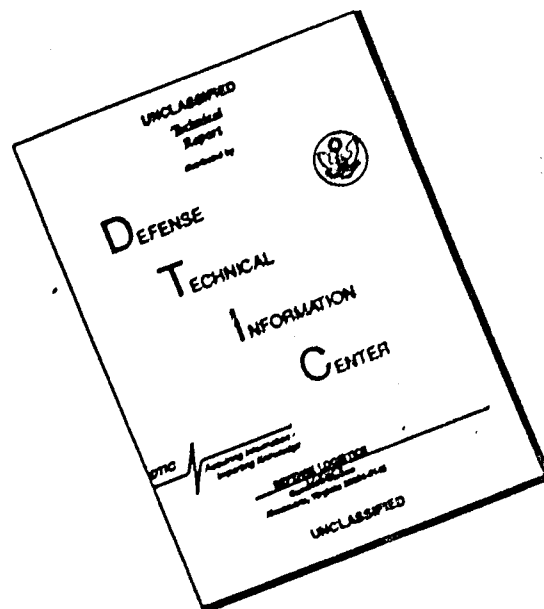
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WASHINGTON, D.C. 20310

IN REPLY REFER TO

AGAM-P (M) (25 Apr 68) FOR OT RD 681090

30 April 1968

AD832334

SUBJECT: Operational Report - Lessons Learned, Headquarters, 27th Engineer Battalion (Cbt), Period Ending 31 January 1968 (U)

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2. Information contained in this report is provided to insure appropriate benefits in the future from lessons learned during current operations and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

Kenneth G. Wickham

KENNETH G. WICKHAM
Major General, USA
The Adjutant General

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DEPARTMENT OF THE ARMY
HEADQUARTERS 27TH ENGINEER BATTALION (COMBAT)
APO San Francisco 96257

EGFC-CO

8 February 1968

SUBJECT: Operational Report - Lessons Learned (RCS CSFOR - 65) for
Quarterly Period Ending 31 January 1968

THRU: Commanding Officer
34th Engineer Group (Const)
APO 96291

Commanding General
25th Engineer Brigade
ATTN: AVBI-OPN
APO 96491

Commanding General
USAFECV (P)
ATTN: AVCC-P & O
APO 96491

Commanding General
United States Army Vietnam
ATTN: AVHGC-DH
APO 96307

Commander-in-Chief
United States Army, Pacific
ATTN: GPOP-OT
APO 96538

TO: Assistant Chief of Staff for Force Development
Department of the Army (ACSFOR DA)
Washington, D.C. 20310

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681090

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8 February 1968

SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 January 1968

Enclosed is the Operational Report - Lessons Learned for the 27th Engineer Battalion (C) and attached units.

Kent C Kelley

KENT C KELLEY
LTC, CE
Commanding

6 Incl

1. ORLL, 591st Engr Co (LE)
2. ~~After Action Report,~~
~~Tahn Linh Airfield.~~
3. ~~After Action Report,~~
~~Han Tan Airfield.~~
4. ~~After Action Report,~~
~~Vinh Long Airfield.~~
5. ~~After Action Report,~~
~~An Thoi Airfield.~~
6. ~~After Action Report,~~
~~Fire Support Base Camp Brava~~

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- 4 - CG, 20th Engr Bde, ATTN: AVBI-EO
- 5 - CO, 34th Engr Gp (Const), ATTN: EGF-OP
- 15 - S-1, 27th Engr Bn (C)
- 2 - S-3, 27th Engr Bn (C)
- 1 - As indorsed US Army Engineer School
- 1 - As indorsed Headquarters, 8th US Army, ATTN: ENGR. (AVCC-MHD)
- 2 - Each Company, 27th Engr Bn (C)
- 2 - 591st Engr Co (LE)

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b-

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OPERATIONAL REPORT - LESSONS LEARNED

Section I: Significant Organizational or Unit Activities

1. Command

a. During the reporting period, the 27th Engineer Battalion (Combat) was located at Blackhorse, Vietnam (YS438975). The major activities of the battalion included: Base construction, combat support to II Field Forces Vietnam (II FFV) tactical operations, airfield construction and rehabilitation, lines of communication (LOC) upgrading and rehabilitation and Base Camp security.

b. During this report period, the battalion remained assigned to the 20th Engineer Brigade and attached to the 34th Engineer Group (Const) for operational control with the exception of A/27 which was under the operational control of the 79th Engineer Group (Const) for the period 4 January 1968, until 31 January 1968.

c. Command

(1) During the entire reporting period, LTC Kent C Kelley, 069124, was the Battalion Commander. The Executive Officer was Major Ray A Boeke, 01930400, the S-3 Officer was Major Thomas R Hicklin, 075615, until 25 January 1968 at which time Cpt William T Kirkpatrick, 093790, assumed the duties.

(2) The Company Commanders during the period were as follows:

HHC - Kenneth J Kerr, 1LT, 05228494

A - Ralph P Dunn, 1LT, 05233884

B - Serge Drillock, Cpt, 0F100602

C - Woodrow G Lyon, Cpt, 05321495

D - Leslie E Snell, Cpt, 05315151

d. Organizational Structure:

(1) Assigned:

Headquarters and Headquarters Company, Blackhorse

A Company, Blackhorse

B Company, Phu Cuoc Island

C Company, Gia Ray

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D Company, Blackhorse

At the end of this reporting period, all units have returned to and are presently stationed at Blackhorse Base Camp.

(2) Attached:

59 st Engineer Company (LE), Blackhorse (NOTE: ORILL is included as inclosure 1 to aid in maintaining unit identity.)

94th Engineer Detachment (Quarry), Gia Ray, Quarry Detachment, 595th Engineer Company (LE), Gia Ray (These units reassigned to 36th Engineer Battalion on 14 November 1967.

156th Engineer Detachment (WD), Phu Quoc Island (This unit reassigned to 36th Engineer Battalion on 15 January 1968.)

2 Sections, 2nd Platoon, 67th Engineer Company (DT), Blackhorse.

(3) Detachments:

The 27th Land Clearing Team is assigned to the 27th Engineer Battalion (C) but is attached for all purposes to the 168th Engineer Battalion (C).

e. The following awards have been earned by the members of this command:

Silver Star Medal	2
Bronze Star Medal	6
Army Commendation Medal	26

2. Personnel, Administration, Morale and Discipline.

a. At the end of the reporting period the strength was:

	O	WO	NCO	EM	TOTAL
Auth	37	3	130	688	858
Asgd	38	2	128	710	878
Atch	6	1	22	194	223

b. Personnel Statistics:

(1) KIA: EM - 0, Off - 0

(2) WIA: EM 3, Off - 0

(3) Medical Evacuation out of country: EM - 13, Off - 1

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- (4) WTS: EM - 44, Off - 0
- (5) Extended (OS Tour): EM - 25, Off - 1
- (6) Transfers (within RVN): EM - 71, Off - 6
- (7) DEROS: EM - 106, Off - 3

c. Administration:

The Battalion underwent the Annual General Inspection during the period 13-17 November 1967. Every area was given a rating of Satisfactory or higher.

d. Morale:

The Rest and Recuperation Program is functioning extremely well. The system now in effect has made possible a flexible response which has enabled the Battalion to utilize virtually every allocation given to it. The statistics for this period are as follows:

	<u>Original Allocations</u>		<u>Turnback Allocations</u>	
	Received	Used	Received	Used
November	50	48	12	11
December	60	60	27	27
January	66	3	32	0

January allocations for February have all been returned except for 3 persons going to Hawaii due to the pending move of this unit at a later date. The program continues to be an outstanding morale booster. The in-country R & R quotas are few in number since most are given to combat units. The average number received is three per month. One of these is given to the Soldier of the Month.

e. Discipline:

Disciplinary problems have been relatively few during this report period. Statistics show 37 Article 15's, 3 Special Court Martials and 12 Congressional Inquiries.

3. Intelligence and Counterintelligence

a. Intelligence activities from an Engineer viewpoint have been varied and interesting. During this past period, official

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intelligence came from the 11th Armored Cavalry Regiment and the 541st Military Intelligence Detachment. All other enemy intelligence has come from contacts with the enemy and consists mainly of inspection of mined areas and ambush sites.

b. Counterintelligence Activities:

- (1) Confidential Clearances granted: 188
- (2) Secret Clearances granted: 17
- (3) Top Secret Clearances validated: 6
- (4) Revocations, Suspensions, etc.: 0

c. Mine incidents during reporting period:

(1) 17 November 1967 - Tractor and trailer hit a mine on Route 2. The right rear front dual was blown off.

(2) 23 November 1967 - A 573rd Bridge Truck hit a mine which left a crater 3' x 5' on Route 2.

(3) 7 December 1967 - A roadblock consisting of holes and a berm at YT522059 which contained a mine consisting of a 15 lb. satchel charge (TNT) electrically primed.

(4) 11 December 1967 - I Troop, 3/11 ACR ACAV hit a pressure detonated mine consisting of 30 lbs. of explosive located in the middle of the road.

(5) 18 December 1967 - At YS454872, a tank detonated a mine which left a crater 9' x 4'. It was estimated to be a 50-60 lb. charge.

(6) 15 January 1968 - A 290M Scraper hit a mine in the laterite pit (YT456006) causing heavy damage, by blowing the left front wheel off which in turn damaged other parts of the scraper. The mine was an estimated charge of 25-30 lbs. leaving a crater 3' wide x 3' long x 2½' deep.

(7) 16 January 1968 - At YT633096, a command detonated mine was detonated on the side of the road against a 591st Engr.Co (LE) ½ ton truck resulting in 1 US KIA and 2 US WIA.

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(8) 18 January 1968 - A 290M Scraper hit a mine in the laterite pit (YT456006) which blew the left rear wheel off of the tractor unit. The mine was estimated at 25-30 lbs. leaving a crater 2½' wide x 5' long x 5' deep.

(9) 20 January 1968 - A grenade exploded at YT457503. One NCO was injured.

(10) 26 January 1968 - A mine of unknown size exploded at YS453865. The hole blown in the road was 5' wide x 5' deep x 8' long.

d. Sniper Incidents: During this reporting period, there were ten sniper incidents involving personnel of the 27th Engineer Battalion (C) in which a total of 33 rounds were received. There were 2 casualties.

e. Observations:

(1) Most VC mines are extremely difficult to detect with an electric mine detector because of the high iron content of laterite soils and the small metallic mass of the mines.

f. Airfield Inspections: During the reporting period, the Battalion has been responsible for the inspections of Vo Dat, Tanh Linh, Xuyen Moc, Xuan Loc and Blackhorse Airfields. Inspections are performed as transportation becomes available.

g. Security:

(1) Ambush Patrols: The 27th Engineer Battalion (C) conducts nightly ambush patrols in the Blackhorse area. Upon insertion the patrols are OPCON to the 11th ACR. During the last quarter, 9568 manhours were expended by the Battalion on ambush patrol duties. During this period no significant contacts have been made. One casualty, not due to hostile fire, was experienced on 5 December 1967. Since then, all patrol leaders from the Battalion have been Officers with no further incidents.

4. Plans, Operations and Training

a. Plans:

(1) During this period, the operations section continued refinement of Base Development plans and unit area layouts for six cantonments in the Battalion area of responsibility. Base Development/Master Plans for Blackhorse Base Camp were revised for current troop strengths and prepared for submission by the Base Development Board.

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(2) Site layout and detailed working drawings were completed for the 135th Assault Helicopter Company, the Base Service Club, the Helicopter Refueling Area and the Parking Apron for the Xuan Loc C-130 Airfield.

(3) Construction Management: Plans and detailed working drawings were made on the LOC Restoration program for LTL 2 and QL 1 from Blackhorse Base Camp to the II-III Corps Boundary (34-67-39LOC-27 and 34-67-41LOC-27). Also plans for typical "Fire Support Base Camps" and typical Combat Support Missions were drawn up.

b. Cantorment Construction Activities:

(1) During the reporting period elements of the 27th Engr Bn (C) continued base construction at Blackhorse, Xuan Loc and Chua Chan (Hill 837) and were relieved of base construction responsibilities at Phu Quoc Island and Gia Ray.

(2) Headquarters and Headquarters Company, 27th Engr Bn (C):

Headquarters Company with only a limited capability for self-help construction was able to complete one 20' x 60' EM Billets and one 20' x 54' Battalion Command Bunker which was covered with more than 80,000 sandbags.

(3) A Company, 27th Engr Bn (C):

(a) Water Wells and Fill Stands:

Company A, 27th Engineer Battalion (Combat) was assigned the task of constructing 3 towers, each for a 21,000 gallon tank, and 3 pump houses; one of each at 54th Artillery Group Headquarters, 2nd Battalion, 35th Artillery, and C Battery, 1/83rd Artillery (all located in Xuan Loc, Republic of Vietnam). The project was initiated on 24 October 1967 and was reassigned on 19 November 1967. During this period a total of 19 days of construction effort was consumed on the projects. The accomplishments were limited to completing the pump houses at 54th Artillery Group Headquarters and C Battery, 1/83rd Artillery; also, a pad was placed for a tower at the 54th Artillery Group Headquarters. All available material was hauled from the Battalion S-4 yard in Blackhorse to the project sites in Xuan Loc.

(b) Long Giao Airfield

Between 3 November 1967 and 7 November 1967, Company A, 27th Engr Bn (C) placed one 96' section and one 10' section of 18" culvert at the Long Giao Airfield; also, 4 sandbag headwalls were built for same.

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Between 26 December 1967 and 29 December 1967, Company A cleared the clear zone on the west end of the airstrip. Concurrent with the foliage clearing they accomplished airfield marking on the airfield.

(c) Self-Help Construction

On 23 November 1967 the 1st platoon placed a 20' x 60' pad for an orderly room while 2nd platoon prefabbed the sides and rafters. During the time Company A, 27th Engr Bn (C) was in the field, 24 November 1967 to 18 December 1967, one NCO was left behind at Blackhorse Base Camp to supervise completion of the building by the Vietnamese civilian workers.

(4) D Company, 27th Engr Bn (C):

(a) Under project number CD89-201-01-T-7S, Water Wells and Fill Stands, D Company took over responsibility for the construction of three water distribution points on Blackhorse Base Camp from C Company, 27th Engr Bn (C), on 26 October 1967. The project consisted of completing construction of one water tower, three 21,000 gallon tanks, two pump houses, access roads, distribution points, and installation of the pumping and purification units. The 3rd platoon completed the construction of the water tower, tanks and pump houses. All the pumping units have been installed and the project is now 85% complete.

(b) On 21 November 1967, work started on project number 67-76MER-27, MER facilities for AHC. One 300 man messhall, four 6 head showers, 8 hole latrines, pads for administration and dayroom buildings, 204,600 square feet of maintenance hardstands, 24 helicopter pads, and 31 revetments were required to be constructed. 1st platoon was responsible for the horizontal construction, and the 3rd platoon for vertical construction. After the 1st platoon placed the pads for the buildings, they began hauling laterite with the support of the 591st LE Company, for the hardstand and roads, and the 3rd platoon began construction of the buildings. The 3rd platoon completed the vertical construction on 27 December 1967, and 1st platoon completed the hardstand, 355 linear meters of road, emplacement of 200 linear feet of culvert and 7 "L" type revetments on 7 January 1968. A total of 11,767 cu yds of laterite was hauled to complete that portion of the project. The maintenance hardstand was put in 4" lifts and compacted with a sheepsfoot roller. A minimum of 12" of compacted laterite was placed. The 3rd platoon then took over responsibility for completion of 24 helicopter pads and revetments. The pads were 20' x 24' of compacted laterite 6 inches thick covered with M8A1 matting. The revetments are 48' long, parallel type revetments. The walls are built of M8A1 matting and 8' pickets, filled with laterite. 14 pads and revetments have been completed to date. This project is now 85% complete.

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(c) During this quarter the 1st platoon has been involved in Base Camp Development under project number 66-179DC-79. This consisted of operating the Batch Plant and placing pads. The Batch Plant has produced 1626 cu yds of concrete this quarter. Of that figure, the 1st platoon used 1008 cu yds in pouring self-help pads and headwalls. They have placed 50 - 20' x 60' pads, one 20' x 90' pad, one 20' x 48' pad and 4 - 20' x 30' pads. Nine concrete headwalls and 140 linear feet of culvert were placed on the Blackhorse Airfield and Convoy Marshalling Area. Using a 5000 gallon tanker, the unit has used 53,500 gallons of crude oil in its dust control efforts covering a total area of 1,248,860 sq ft.

c. Operational Support Activities:

(1) During the reporting period, elements of the 27FBC participated in operational support activities at Tanh Linh, Vinh Long, Xuan Loc, Blackhorse, Ham Tan and Phu Quoc. Units have participated in operational support missions in Phouc Long, Phouc Thanh, Binh Long, Binh Duong, Long Khahn and Binh Tuy Provinces.

(2) Headquarters Company, 27th Engineer Battalion (Combat):

The Heavy Equipment Section provided equipment support to operational activities throughout the III and IV Corps area.

(3) A Company, 27th Engineer Battalion (Combat):

(a) Ham Tan Airfield:

At Ham Tan the 3rd platoon of Company A, 27th Engineer Battalion (Combat) continued renovation of a C-130 airfield parking apron; however, due to deterioration caused by heavy rainfall, a percentage of 94 was maintained during this quarter. Other construction effort, included at Ham Tan during the reporting period, was directed toward a deteriorated road net between the FCA office and commo facility. The road net is 300 meters in length and was 50% complete on 2 December 1967, when the project was reassigned to the 36th Engineer Battalion (Const). The accomplishments included hauling laterite fill, spread and compacted on the road net, shaping the road and cutting drainage ditches, building a sandbag retaining wall on each side of the road net (50% completed), and placing 120' of 48" culvert.

(b) Tanh Linh Airfield

The 1st platoon of Company A, 27th Engineer Battalion (Combat) was assigned the mission of moving to Tanh Linh and accomplishing repairs as necessary on the airfield to bring it up to a Type III/4-130. One officer, one NCO and 16 EM (6 EM being attached from the 591st Engineer Company (Light Equipment) were airlifted to Tanh Linh on 4 November 1967 along with a scoop loader, two D-4 Dozers, one sheepsfoot, three 2½ ton dump trucks and one towed grader.

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The construction effort consisted of clearing 6,000 square meters of jungle, removing soft materials from the center of the runway and replacing with laterite fill, grading and compacting the laterite fill, cutting a 3,000 foot ditch on each side of the runway, placing two 110 foot sections and one 96 foot section of 18" culvert across the runway, reconstructing 420 meters of 14' roadway, placing an 18' section of 18" culvert in the road net, and cutting a 150 meter diversion ditch between the parking apron and road net. The personnel and equipment were extracted from Tanh Linh back to Blackhorse Base Camp on 24 November 1967.

(c) Xuan Loc Airfield

On 14 November 1967, the 1st platoon of Company A, 27th Engineer Battalion (Combat) initiated the task of upgrading the airfield in Xuan Loc, Republic of Vietnam. The task consisted of placing M8A1 matting for two 150' x 150' turnarounds on a 1" to 1½" sand seating layer. During the 10 days that was expended on the project, the 1st platoon dug a trench along each side of the 1st turnaround, placed a sand layer for the matting and treated it with RC-800, and locked and laid 270 pieces of M8A1.

(d) Route #1 Rehabilitation

On 10 November 1967, the 3rd platoon and one squad from the 2nd platoon of Company A, 27th Engineer Battalion (Combat) commenced hasty repair of Route #1 and 2 intersection east toward Gia Ray. The hasty repairs consisted of patching holes in the asphalt with gravel treated with RC-800, constructing a bypass around a damaged culvert, and placing culverts across the road as necessary. On 25 November 1967, the Company moved to the field near Gia Ray, with the exception of the personnel in Tanh Linh and Ham Tan. On the 26th and 27th of November 1967, the time was utilized in setting up the forward CP area. Setting up the CP area included erecting tents with floors, constructing towers for perimeter defense, building bunkers, building latrines and showers, and stringing concertina wire for a defensive barrier. The personnel from Tanh Linh and Ham Tan linked up with the company at the forward CP location, Tanh Linh personnel on 28 November 1967 and Ham Tan personnel on 10 December 1967. With 2nd platoon, 591st Light Equipment Company attached, the mission was to bring QL 1 from intersection of QL 1 and 2 east to the bypass at YT555063, to a class 50, all weather MACV Standard highway. To achieve this the existing shoulders were cut out 8' wide and 3' deep on each side of the roadway and replaced with laterite fill. After the laterite fill was hauled in it had to be compacted, graded, and shaped. The drainage consisted of cutting a drainage ditch on each side of the road and replacing or extending culverts as necessary.

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(e) Operation SANTA FE

From the intersection of Route 1 and 333 to the II - III Corps boundary, the objective was to maintain the road to keep it open to division traffic. To achieve this A Company commenced cleaning the drainage ditches, placing culverts as necessary, cleaning the shoulders from brush, and accomplishing repairs as necessary on the roadway. On 18 December 1967, after a total of 38 days had been consumed on the project, A Company was notified to move back to Blackhorse Base Camp and prepare for another mission. Accomplishments at this time included 9,120 meters of road maintained, 499 linear feet of culvert placed, 1200 meters of road constructed and a total of 27,475 cu yds of laterite moved.

(f) Operation San Angelo

During the period of 6 January 1968 to 12 January 1968, Company A, 27th Engineer Battalion (Combat) was involved in a combat support operation in support to the 3rd Brigade, 101st Airborne Division. The mission included extensive mine sweeping, causeway repair, and hasty repair of Route #1A to pass Division sized loads. The clearing of the road began at first light, 6 January 1968 and consisted of one squad fifty yards in advance of the mine detectors. This squad was utilized to look for booby traps and to clear overhanging foliage. Their equipment included 2 chain saws, 2 axes, 3 machettes and one grappling hook. Following this element at twenty-five yards were two D7E dozers, one on each side of the road at a distance of fifteen yards from the center line. These dozers were utilized to rip to a depth of 12" to 18" for command detonating mine wires. The actual mine sweep team consisted of 8 mine detectors, two on each shoulder and four on the road surface. Bringing up the rear were demo personnel and equipment. The most critical phase of the operation was the causeway construction. During combat support missions, it is recommended that twenty-five percent be added to all work estimates when working with infantry troops in a limited work site area. Due to the constant movement of infantry over the roads, dozer and truck operators must be constantly alert.

(g) Operation Attala

1. Bien Hoa

Between 12 January 1968 and 25 January 1968, Company A, 27th Engr Bn (C) was billeted at 34th Engr Bn (Const) at Bien Hoa. During this period the Company participated in Base Development which consisted of stringing 520 rolls of concertina wire, placing 35 cu yds of asphalt, placing 286 feet of culvert, and hauling of 570 cu yds of laterite.

2. Mien Thaan

On 20 January 1968, the 1st platoon of Company A, 27th Engr Bn (C) was airlifted from Bien Hoa to the Mien Thaan Airfield, along with a $\frac{1}{2}$ ton jeep, one $\frac{3}{4}$ ton truck, one $2\frac{1}{2}$ ton truck, a

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Navy cube on a pole trailer, a 1,000 gallon tank on a pole trailer, an asphalt distributor and a grader. The airstrip, 93' x 1,000', had to be graded level and the drainage ditches cleaned out before the coat of penepime was distributed. An 80' x 500' helipad and an area 93' x 1,000' was peneprimed utilizing 200 barrels of penepime and 75 barrels of diesel. The project wasn't completed due to the limited supply of penepime on hand at the project site. The platoon was then relieved of the project to prepare for unit movement; however, due to limited airlift transportation only a portion of the platoon has linked up with the company.

3. Chon Thaan

On 26 January 1968, Company A, 27th Engr Bn (C), moved to a work site area located approximately 7 miles west of Chon Thaan to perform expedient repairs on a road net. During the 3 days that the company was in the area, they performed hasty repairs on 3 blown bridges. The expedient repairs consisted of placing 54' of culvert, moving in 1,500 cu yds of fill material, using 600 linear feet of 6" to 12" logs, building one log culvert, blowing one bridge and embankment and dozing 500 meters of road.

(4) B Company, 27th Engineer Battalion (Combat):

For the period covered by this report (Nov, Dec, Jan) B Company, 27th Engr Bn (C) continued rehabilitating the airfield at An Thoi, Phu Cuoc Island, Republic of Vietnam. The mission was completed on 10 January 1968. From 10 January 1968 through 23 January 1968, B Company was demobilizing and awaiting transportation to the mainland, RVN. Company B, 27th Engr Bn (C) departed An Thoi, Phu Cuoc Island, RVN, at 0700 hours 24 January 1968 aboard LST 456. TO&E equipment, attached equipment, 89 enlisted men, 4 officers, arrived at Newport 1230 hours on 26 January 1968. The unit departed Newport 27 January 1968 via convoy and arrived at Blackhorse Base Camp 1700 hours the same day. The company spent 71 days building the airfield and 21 days preparing to move and moving.

(5) C Company, 27th Engineer Battalion (Combat):

(a) Construction along QL 1 from TL 333 to QL 2:

1. During the majority of this period, the company was engaged in road, drainage and bridge construction along QL 1 from TL 333 to QL 2, Long Khanh Province, RVN. Work was distributed into three major bridge sites, 8 major culvert sites & 4.5 miles of road. There are two bridges, 14 culverts and 9.1 miles of road remaining to be worked.

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2. Construction effort:

a. Bridge Construction

(1) Bridge # 1 consisted of 2 each 72" 50 foot culverts, 2 headwalls (40 cu yds) and bypass.

(2) Bridge # 2 consisted of 3 each 72" 50 foot culverts and 2 headwalls (150 cu yds).

(3) Bridge # 3 consisted of 5 each 72" 50 foot culverts with 2 headwalls (154 cu yds).

b. Culvert extensions: There were 8 culvert extensions requiring 15-20 cu yds of culvert area. The connecting necks have been placed and the headwalls are presently under construction (204 cu yds). The bypass has been put in and the footers for the culverts placed or poured.

c. Road work: 94,005 sq yds of road has been constructed.

d. Drainage: 44,300 linear feet of drainage ditch has been cut.

e. Acres cleared: 89.4 acres have been cleared.

f. Materials hauled:

(1) There have been 2,165 cu yds of 3.5" (-) rock hauled during the period.

(2) There have been 890 cu yds of 3/4" (-) gravel hauled during the period.

(3) There have been 10,209 cu yds of laterite hauled during this period.

(4) There have been 490 cu yds of sand hauled during this period.

(5) There have been 100 cu yds of blast rock hauled during this period.

(b) CHUA CHAN

1. The mission was to repair the burned messhall and install a water pump and water distribution system.

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SUBJECT: Operational Report - Lessons Learned

2. Personnel replaced the messhall which was in turn partially destroyed in an accident with a Chinook. A further replacement of the messhall with heavy anchor supports and braces was initiated and completed.

(6) D Company, 27th Engineer Battalion (Combat):

(a) On 1 November 1967, the 1st platoon finished the Cam Chau culvert project on Route 321. The project consisted of removing existing culvert and emplacing four 72" culverts 30 feet long. This reopened the road to heavy tank traffic.

(b) On 30 December 1967, the 2nd platoon completed project number 34-67-LCS-27, Vinh Long Airfield Rehabilitation. They completed 5,000 linear feet of shoulders and repaired 17,644 sq ft of birdbaths (depressions in the runway surface). The birdbaths were largely found in the touchdown areas of the runway. In these areas the impact of incoming aircraft caused a pumping action, washing or shifting the sand cushion out and leaving depressions in the surface of the runway. To repair and prevent these birdbaths from developing again, the M8A1 matting was taken up and the sand cushion removed. The sand was then mixed with a 10% asphalt cutback. 9.5 gallons of asphalt cutback (RC-800) was used per cubic meter of sand. This sand/asphalt mix was then placed where the untreated sand was removed, brought to grade and the M8A1 matting replaced. In this manner, all birdbaths were repaired. This method appeared to work. No birdbaths developed in the area that had been repaired with sand/asphalt mix during the time the unit was completing the project. The 2nd platoon arrived at Blackhorse Base Camp on 31 December 1967.

(c) Under project number 67-2CS-27, Xuan Loc Airfield, the 2nd platoon began work on the turnarounds on 10 January 1968. The project consisted of putting in a 150' x 150' turnaround on each end of the runway. The 591st LE Company laid the base course of 1½" of sand/asphalt mix and D Company laid the M8A1 matting. The platoon began laying steel on the east end of the runway. They laid 94 rows, 12½ panels wide, on each turnaround. The turnarounds were anchored with 8' U-type pickets driven into the ground. The top 6" was bent over, flattened and welded to the steel on every other row. To give a smooth surface going from runway to turnarounds, four concrete transition ramps were also placed. The project was completed on 27 January 1968.

d. Training: Two major training programs have affected this Battalion this reporting period:

(1) Orientation classes conducted by the 11th ACR, totaling six days of instructions, were attended by 27th EBC replacements.

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(2) Operational necessity permitting, Battalion policy established Sunday afternoons for detailed maintenance and a minimum of a one hour block of scheduled instruction on training required by the 27th Engr Bn (C) regulation 350-1.

5. Logistics:

a. Several significant logistic actions took place during the period 1 November 1967 to 31 January 1968. First, the Battalion successfully passed its Annual General Inspection on 13 November 1967.

b. Two water points were committed on 6 December 1967 to support the 11th Armored Cavalry Regiment on combat operations. TOE 5-35E authorizes three personnel per 1500 gallon truck mounted erdlator, but two can set up and operate one unit if potable water requirements do not exceed 15,000 gallons per day (10-12 hour operation).

c. Problems were experienced in obtaining fixed wing aircraft support to haul men, rations and materials to support units located a considerable distance from Base Camp. One successful move of a combat Engineer platoon and their hand tools was made from Blackhorse to An Thoi. No such problems have been experienced with rotary wing aircraft.

d. To support an LOC restoration project, a forward operational Headquarters was established approximately 33 kilometers from Base Camp. The S-4 element consisted of a water point team and one reliable E-4 whose primary function was to relay requests for material back to the rear area S-4 construction materials yard, and to assist in delivery. This arrangement worked satisfactorily. Also, a 10,000 gallon collapsible tank for diesel fuel was installed to ease refueling construction equipment. Resupply for the bladder was furnished by a 5,000 gallon tanker from the local Class III Support.

e. This unit is engaged primarily in Base Camp Development, Combat Support and LOC work. A list of 150-200 different items of construction materials comprises the large majority of all materials issued. To date, materials have been requested for each particular project separately. On several occasions, this has resulted in delays while awaiting basic construction materials. Establishment of a 30 day supply of low-dollar value, high volume items based on PLL procedures outlined in Section VI, AR 735-35, is expected to provide better support of construction projects and ready identification of excess. The system has been initiated, but because of a lack of experience, an evaluation cannot be made at this time. The requisitioning and issue of construction materials has been accomplished with very good support from depots in the Saigon-Long Binh Area. However, there are certain small hardware and plumbing supplies which seem to be in short supply (or unavailable), for example-Hinges. Also, the release of command controlled items, in some instances, has taken such a period of time that construction projects have been delayed awaiting release of materials.

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6. Force Development: None

7. Command Management: Command and control at the Battalion level is severely hampered by the lack of organic aviation. Every opportunity is taken for "space available" flights to inspect, control and resupply elements of this command which were widely scattered in the III and IV Corps Area. The whole management process is compromised to a high degree by the non-availability of responsive transportation. See Section II, Part II recommendations.

8. Inspector General: On 13 November 1968, the Battalion stood an I.G. inspection and passed with an overall grade of above average.

9. Civic Affairs: During this reporting period, 6 houses were built for VN families in Soui Cat near Gia Ray in Long Khanh Province. Materials were provided by the Province Chief. All six houses replaced homes that were torn down to make room for the right-of-way of QL 1.

Section II, Part I - Observations (Lessons Learned)

1. Personnel: None

2. Operations:

a. Item: Picketpusher

Discussion: Building parallel type revetments out of M8A1, it is necessary to drive pickets parallel to each other at a certain distance and at a certain angle. In an attempt to find a method to do this efficiently and obtain the desired results, two 105 shell casings were welded on each end of a piece of scrap iron, $\frac{1}{4}$ " thick, $1\frac{1}{2}$ " wide and 3' long (see figure 1). This was used in conjunction with a bucket loader. Two men would hold the pickets the correct distance apart and then place the picket pusher over the top of the pickets. The bucket loader would then force them into the ground.

Conclusion: This proved an efficient method of driving pickets quickly and at the right distance and angle. 60 pickets could be driven in an hour.

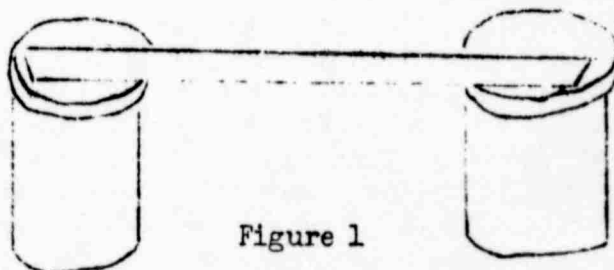


Figure 1

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b. Item: Culvert Headwalls

Discussion: During the construction of multiple culvert systems (SANTA FE), two methods of headwall construction were attempted. One method was prefabricating the headwalls prior to the placement of the culverts. The other method consist of "in place" construction after installation of culverts.

Observation: It was determined that prefabrication of large headwalls makes them too bulky and creates a weak point at section joints.

c. Item: Bridge Construction By-Pass:

Discussion: Due to the time required to construct a multiple culvert system, it was necessary to construct a semi-permanent by-pass for traffic. On one occasion, the by-pass was placed upstream and on another it was placed on the downstream side.

Observation: It was determined that an upstream by-pass disturbs the water flow and stream bed such that it hindered accuracy and placement of the permanent culverts.

d. Item: Hasty Bridge or Culvert Repair (By-Pass):

Discussion: In several isolated areas it becomes necessary to construct a by-pass around a bridge or culvert which has been destroyed by the enemy, before work on the bridge or culvert can begin. A quick study of manhours indicates that as many troops are required to remove the by-pass as to install it; thus, from this stand point alone, removal is undesirable. A more important reason; however, is the benefit of having two facilities at one site, one permanent MACV standard facility on the roadway and a second one way facility capable of passing the same volume on the by-pass. It becomes important, then to pay as much attention to the by-pass construction as the traveled way.

Observation: Bridge, culvert and other by-passes should be permanent in nature.

e. Item: Application of Double Surface Treatment

Discussion: TM 5-337 describes several types of surface treatments and prescribes certain design criteria. Recent experience indicates that construction of a book specified surface by a combat engineer battalion is difficult. The problem is a physical one; in one case it is virtually impossible to distribute a preselected exact amount of aggregate due to the gradation stops on the aggregate distributor. A quantity of 50 lbs per square yard of 3/4" (-) material appears to be minimum application. In the other case, the application of the second aggregate lift, is dependent on two things; the quantity of the first lift and a certain quantity required to protect the second

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SUBJECT: Operational Report - Lessons Learned

bitumin application from being picked up by the roller. The quantity of 25 lbs per square yard appears to be workable from all standpoints.

Observations: The quantity of materials for a double surface treatment most workable for combat troop application is:

First Bitumin:	0.5 gallons per square yard
First Aggregate:	50 lbs per square yard (3/4"(-))
Second Bitumin:	0.3 gallons per square yard
Second Aggregate:	25 lbs per square yard (3/8"(-))

f. Item: Seeding metal in mined areas to confuse mine detector operators.

Discussion: It has been found at several areas where the VC have planted mines, that they have also seeded the area for quite a distance around to confuse and frustrate the detector operators. Where mines have knocked out pieces of equipment, it has been found that search crews had checked the area and found only small pieces of metal. Most of these metallic objects are larger than the triggering devices used in the mines and so the crews would miss these triggers.

Observation: Crews should be taught to constantly check every possible mine, regardless of the amount of false alerts encountered.

g. Item: Control of drift of M8A1 matting

Discussion: Previous lessons learned stated M8A1 matting would drift as much as 2 feet 6 inches in a distance of 1,000 feet and the first 6 inches of drift would occur as early as the 19th row. It was found by B Company, 27th Engineer Battalion (C) that if a standard demension of 8 3/4 inches is maintained between the female inserts of adjacent panels, the above amount of drift will not occur. In laying 3,900 feet of M8A1 the amount of drift was never more than 1/2 inch off center. This amount was corrected in the stretching operation. To expedite laying, the go-no go gage shown in Fig 2 was built. The gage is inserted in the end female inserts of adjacent panels and one of the panels is driven with a sledge hammer until the panels are flush with the gage. Using the method described above, 400 consecutive rows of Pickard were layed in the airstrip at An Thoi at the rate of 200 rows per day.

Observation: The gage in Figure 2 could be manufactured & packed with the matting issued for each M8A1 mission. It is suggested that 5 gages for each airfield missions be made; the reason being on turnarounds and parking aprons, the number of laying crews is increased.

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h. Item: Pre-bending of M8A1 matting

Discussion: In M8A1 standard patterns, there is a requirement for embedding every fourth row of matting into a side trench. The purpose for this is to restrain lateral movement. In the airstrip at An Thoi, every fourth panel was to be placed into a side trench and back filled with soil cement. It was felt that with a 90 degree bend, the soil cement could be more thoroughly compacted on both sides of the panel, thus providing more rigidity to the strip. The problem then was, how to bend the matting in the shape of an L with the short leg being 2 feet long. The device shown in Figure 3 was built. It functioned in an outstanding manner for all 1,200 panels. The device was operated as follows: A panel of M8A1 was inserted into the device. A half-panel was placed behind the extended two (2) feet section to be bent. A 5-ton truck then merely backed over the half panel bending the panel to a clean 90 degree angle. On an average, approximately 15 panels can be bent per hour.

Observation: When M8A1 is used for building a deliberate airfield, the above method should be used. It is also recommended that every other panel be embedded into the soil/cement side trench instead of every fourth panel.

i. Item: Moving M8A1 matting

Discussion: In building the airstrip at An Thoi, Phu Quoc Island, RVN, it was necessary to secure the matting in a stockyard to prevent pilferage. Also during construction, it was necessary to double handle the matting at times. If existing matting has to be removed before new matting can be layed, this also creates a mat handling problem. This problem can be solved by manpower but it is time consuming. At times, B Company, 27th Engr Bn (C) was able to borrow a fork lift. This increased the efficiency many times and was also an aid for morale.

Observation: A fork lift should be issued or term loaned to the unit assigned the mission of building a matted airfield.

3. Training and Organization: None

4. Intelligence: None

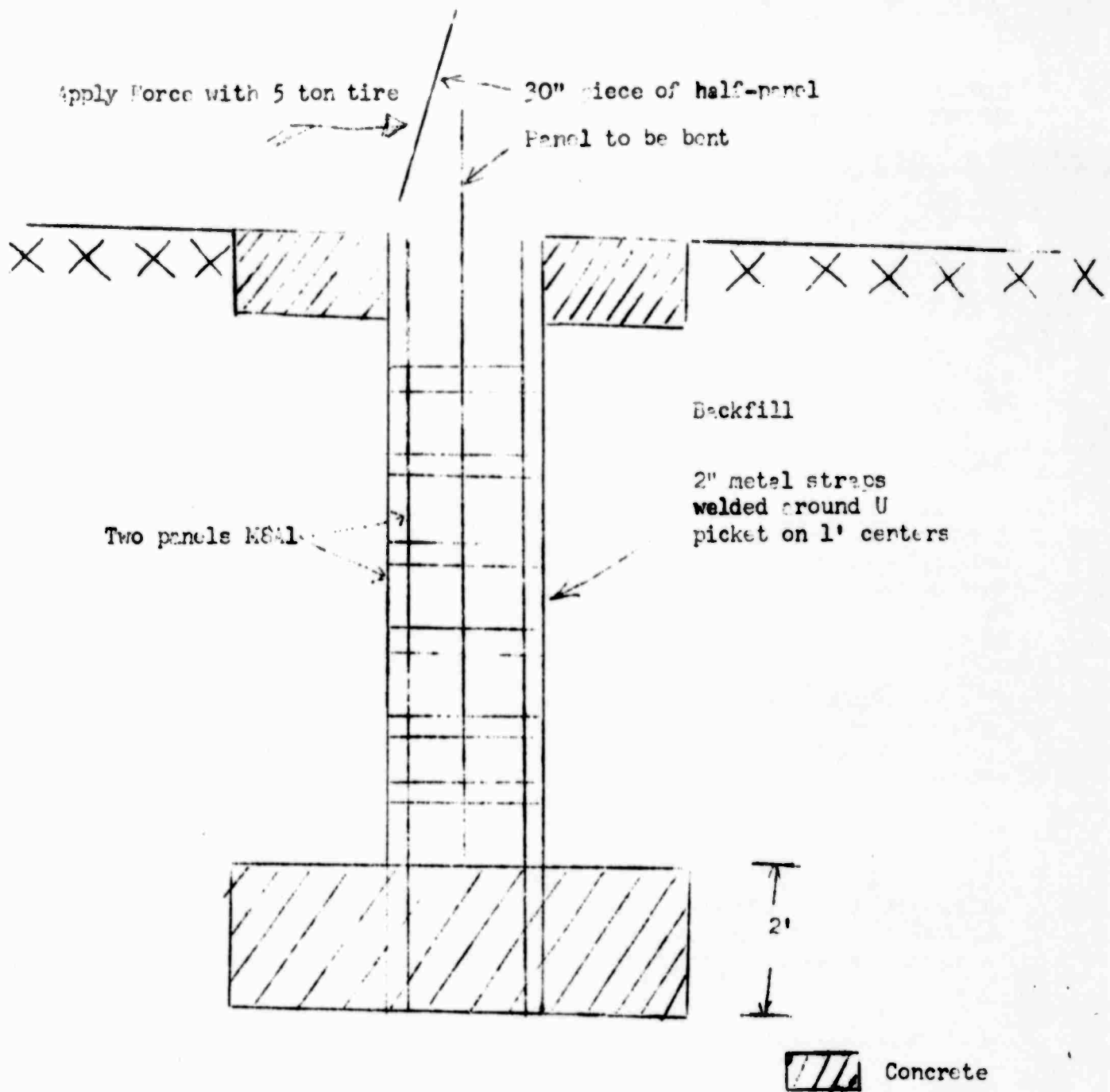
5. Logistics:

Item: Manning of water points

Discussion: TOE 5-35E authorizes three personnel per 1500 gallon per hour, truck-mounted water purification unit. In all instances when the units have been committed, the water point teams have not been called upon to produce more than 15,000 gallons of potable water per day. This task can be accomplished during a normal workday

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Pre-bending device for M841 matting

Figure 3

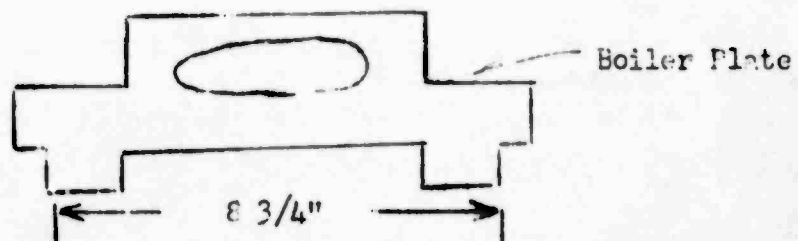


Figure 2

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of ten to twelve hours. Experience has shown that two water point specialists can set up and operate a water point efficiently without additional help. The three TOE positions are: 1-E4, 1-E3 and 1-E2, (the only E-2 slot in the TOE). The low grade levels offer little chance for promotion, and thus discourage other-wise qualified personnel from continuing to work in these vital positions.

Observation: Two water supply specialists can effectively set up and operate one 1500 gallon per hour water purification unit under normal combat conditions in Vietnam.

Section II, Part II, Recommendations

1. Personnel: The Battalion TOE should be modified to include a 2 man message center. The difficulties encountered in transporting mail and intra-command correspondence between outlying units and the Battalion Headquarters would thereby be alleviated. The personnel could also be used as alternate mail clerks to enable faster sorting and collection of mail.

2. Operations:

a. Because of the wide dispersion of the Engineer Troops assigned and attached to this Battalion and variety of Engineer Missions assigned, it has become very apparent that proper command control and technical assistance and guidance are impossible without the use of aircraft. The limited resources available to both the 34th Engr Gp (Const) and the 20th Engineer Brigade do not enable them to provide sufficient aerial sorties to satisfy this unit's requirements. Local aircraft resources (those stationed at Long Giao) are normally committed on higher priority combat assault or combat support missions.

b. It is recommended that as a minimum, one UH-23 be assigned to the Engineer Battalion (Combat) (Army).

3. Training and Organization: None

4. Intelligence:

a. Due to the type of terrain encountered and distances involved in reconnaissance missions in Vietnam, wheeled vehicles, as are presently used, are inadequate for the S-2 section of an Engineer Battalion to properly execute its mission.

b. It is recommended that three M113 Armored Personnel Carriers be added to the TO&E equipment of an Engineer Battalion (Combat) (Army) while it is in the Vietnam Theatre of Operations.

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5. Logistics:

a. The only TOE E-2 slot in the Battalion is in the water supply team. The low grade level offers little chance for promotion and thus discourages qualified personnel from continuing to work in these vital positions and while in these positions, doing a good job.

b. It is recommended that consideration be given to modifying the TO&E so that the three water supply personnel authorized per water point be replaced by two E-4 water supply specialists.

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EGF-OP (8 Feb 68)

1st Ind

MAJ Dorris/wec/VT 2987

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 January 1968.

→HQ, 34th Engineer Group (Const), APO 96291, 20 February 1968

→TO: Commanding General, 20th Engr Bde, ATTN: AVBI-OPN, APO 96491

(U) This Headquarters concurs with the 27th Engineer Battalion's ORLL subject to the following comments:

a. Section 1, para 1b: The paragraph should read "The battalion remained assigned to the 34th Engineer Group. Co A was under the operational control of the 79th Engineer Group (Const) for the period 4-31 January 1968."

b. Section 1, para 1d(2): Units were attached and changed attachment with the exception of the two sections of the 67th Engr Co (DT) which were in direct support.

c. Section 1, para 1e: The awards indicated as earned reflected those that were recommended during the quarter. Awards presented include no silver stars, 9 Bronze Star Medals and 24 Army Commendation Medals.

d. Section 1, para 2b: WIA should read 3.

e. Section 1, para 3c and 3d: Incidents include actions of the 591st Engr Co (LE) and 11th Armored Cavalry Regiment as they were associated with the 27th Engr Bn (C)(A).

f. Section 1, para 4a(3): Plan referred to for typical Combat Support Missions is a checklist or set of standard operating procedures (SOP).

g. Section 1, para 4b(4)(b): Base construction facilities such as the messhall and administrative buildings were constructed in addition to MER under an existing cantonment directive.

h. Section 1, para 4c(3)(b): Tanh Linh Airfield is a type I, C-130 capable as indicated in the after-action report (Incl 3). A total of 600 acres of brush was cleared during the project.

i. Section 1, para 4b(4)(C): A company started the project but it was eventually finished by D Company as stated in para 4b(6)(c).

j. Section 1, para 5e: It is the policy of this headquarters that a 30 day stockage is only authorized in the case of materials to support combat operations. Other supplies will be requisitioned in accordance with an approved BOM. The 27th Engr Bn has been advised by this headquarters of the proper stockage levels of construction materials. It is anticipated that future delays can be precluded by timely forecasting of material requirements.

EGF-OP

20 February 1968

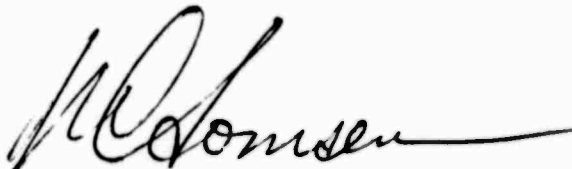
SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly Period Ending 31 January 1968. (Cont'd)

k. Section II, Part I, para 2h: Non concur in the recommendation to bend every other panel of M8A1 for anchorage. The requirement or desirability has not been firmly established as yet. It appears the airfields with every 4th panel bent as anchorage are performing satisfactorily.

l. Section II, Part I, para 5b: Non concur. Recommendation will be considered by this headquarters. At this time comments from other units are not available as a basis for a recommendation at this time. Recommendation on this proposal will be contained in next quarter's ORLL.

m. Incl 2 (591st Engr Co (LE) ORLL), Section 2, Part I, para 2b: Application rate should read 0.5 gal/sq yd IAW Section II, Part I, para 2e of Incl 1 (27th Engr Bn (C)(A) ORLL).

FOR THE COMMANDER:



W C TOMSEN
Major, CE
Adjutant

Copies furnished:

2 - ACSFOR DA

1 - CO, 27th Engr Bn

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AVBI-OS (8 Feb 68) 2nd Ind (U)
SUBJECT: Operational Report - Lessons Learned (RCS CSFOR-65) for
Quarterly Period Ending 31 January 1968.

DA, HEADQUARTERS, 20TH ENGINEER BRIGADE, APO 96491 1 March 1968

Commanding General, USAECV(P), ATTN: AVCC-F&O, APO 96491

1. Forwarded for your information and necessary action IAW USAECV(P)
Regulation 1-19, dated 15 April 1964.

2. This headquarters concurs with the ORLL submitted by the 27th
Engineer Battalion and comments in the first indorsement, as modified
by the following comments:

a. Section II, Part II, Paragraph 2: Do not concur. When group
MTOE is implemented, recommend that aircraft allocations be made at
the group level.

b. Section II, Part II, Paragraph 5: Concur if it can be deter-
mined that the third EM is not required to efficiently operate the
water purification unit.

FOR THE COMMANDER:



CECIL D. CLARK
Major, CE
Adjutant

AVCC-P/O (2 Feb 68)

3rd Ind (U)

SUBJECT: Operational Report-Lessons Learned (RCS CSFOR-65) for Quarterly
Period Ending 31 Jan 68

HEADQUARTERS, UNITED STATES ARMY ENGINEER COMMAND
VIETNAM (PROV), APO 96491 6 MAR 1968

TO: Commanding General, United States Army Vietnam, ATTN: AVHGC-DST,
APO 96375

The attached ORLL, submitted by the 27th Engineer Battalion (CBT),
has been reviewed by this headquarters and is considered adequate.

FOR THE COMMANDER:

John Chaloud 1LT, AGC
for RICHARD B. BIRD
Captain, AGC
Assistant Adjutant General

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AVHGC-DST (8 Feb 68)

4th Ind (FOUO)

SUBJECT: Operational Report - Lessons Learned (RCS CSFOR - 65) for
Quarterly Period Ending 31 January 1968

HEADQUARTERS, US ARMY VIETNAM, APO San Francisco 96375 26 MAR 1968

TO: Commander in Chief, United States Army, Pacific, ATTN: GPOP-DT,
APO 96558

1. This headquarters has reviewed the Operational Report-Lessons Learned for the quarterly period ending 31 January 1968 from Headquarters, 27th Engineer Battalion (Combat) (WAZ3AA) as indorsed.

2. Pertinent comment follows: Reference item concerning manning of water points, page 18, paragraph 5; and page 21, paragraph 5; reference item concerning personnel, page 20, paragraph 1; and reference item concerning intelligence, page 20, paragraph 4. Each of the above items proposes modification of the existing unit MTOE, to reflect changes or additions to personnel, or additions of equipment. These proposed changes require submission of a new MTOE IAW DA Circular 310-44, dated 5 November 1967, and USARV message 66711, DTG 100458Z Oct 67, subject: Standardization of Authorized Allowances. Any increase in manpower must be justified in terms of trade-off spaces or through previously approved adjustments in USARV Force Structure prior to submission of MTOE. Since this unit is included as a part of Phase II Standardization, justification for the proposed changes must be sufficient to warrant configuring this unit in other than the standard manner for the Engineer Battalion (Combat)(Army).

3. A copy of this indorsement will be furnished to the reporting unit through channels.

FOR THE COMMANDER:

C. S. Nakatsukasa
C. S. NAKATSUKASA

Captain, AGC

Assistant Adjutant General

Copies furnished:

HQ 27th Engr Bn (Cbt)

HQ USAECV(P)

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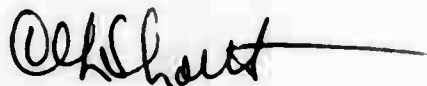
GPOP-DT (8 Feb 68) 5th Ind (U)
SUBJECT: Operational Report of HQ, 27th Engineer Battalion (Combat)
for Period Ending 31 Jan 68 (RCS CSFOR-65) (UIC: WAZ3AA)

HQ, US Army, Pacific, APO San Francisco 96558 12 APR 1968

TO: Assistant Chief of Staff for Force Development, Department of the
Army, Washington, D. C. 20310

This headquarters has evaluated subject report and forwarding indorse-
ments and concurs in the report as indorsed.

FOR THE COMMANDER IN CHIEF:



C.E. SHORTT
CPT, AGC
Asst AG

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DEPARTMENT OF THE ARMY
591st Engineer Company (Light Equipment)
APO San Francisco 96257

31 January 1968

SUBJECT: Operational Report-Lessons Learned, (RCS CSFOR-65) for the
Quarterly Period Ending 31 Jan 1968.

THRU: Commanding Officer
34th Engineer Group (Const)
APO US Forces 96291

THRU: Commanding General
20th Engineer Brigade
APO US Forces 96491

THRU: Commanding General
USA Engineer Command Vietnam (Prov)
ATTN: AVCC-PRO
APO US Forces 96491

THRU: Commanding General
United States Army, Vietnam
ATTN: AVHGC-DH
APO US Forces 96307

THRU: Commander in Chief
United States Army, Pacific
ATTN: GROP-OT
APO San Francisco California 96588

TO: Assistant Chief of Staff of Force Development
Department of the Army (ACSFOR-DA)
Washington D.C. 20310

SECTION I, Significant Organizational or Unit Activities

1. Command

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31 January 1968

SUBJECT: Operational Report-Lessons Learned, (RCS CSFOR-65) for the Quarterly Period Ending 31 Jan 1968. (Con't)

a. During the reporting period the 591st Engineer Company (LE) was located at Black Horse RVN (YS 138975) except for 6 days in December when it was located at a forward command post with the 27th Engineer Battalion (C)(-) YT 627068. The major activities consisted of airfield construction, airfield rehabilitation, combat support of II Field Forces Vietnam (IIFFV), Loc restoration, rehabilitation and upgrading.

b. During this period, the company remained assigned to the 20th Engineer Brigade and continued its attachment to the 27th Engineer Battalion (C) for operational control.

c. There were no command changes during this period.

d. Organization:

- (1) The company is still organized under TOF 5-54D.
- (2) Attachments: Two sections of the 67th Engineer Co (DT).

e. The following awards were received by members of the company.

<u>AWARD</u>	<u>NUMBER</u>
Army Commendation Medal	1
Purple Heart	2

2. Personnel, Administration, Morale and Discipline.

a. At the end of the reporting period the strength was:

	<u>O</u>	<u>WO</u>	<u>EM</u>	<u>AGG</u>
Authorized	5	1	180	186
Assigned	5	1	174	180

b. Personnel Statistics:

KIA: 1
WIA: 5
ETS: 16
Transferred within RVN: 24
Other Losses: 4

c. Administration: Virtually no administrative problems developed which could not be solved within the unit.

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31 January 1968

SUBJECT: Operational Report-Lessons Learned, (RCS CSFOR-65) for the Quarterly Period Ending 31 Jan 1968. (Con't)

d. Morale: The morale within the unit has continued at an exceptionally high level.

e. Discipline: Disciplinary problems have been infrequent. Records show that there were 9 non judicial punishments and no courts martial.

3. Intelligence and Counterintelligence

a. All intelligence information is obtained from the 27th Engineer Battalion (C) S-2.

b. Counter intelligence:

(1) Since 1 November 1967 there have been four incidents involving mines and one incident involving sniper fire. All of these incidents resulted in injury or damage to US personnel/equipment.

(a) On 18 November a low bed hit an anti tank mine with one slight casualty and loss of the vehicle. The charge was estimated at 20-30 pounds. The mine was emplaced on the west side of the road near where several other mines had been emplaced.

(b) On 15 January a tractor 290M detonated a mine in a laterite pit causing the loss of the tractor. The operator was slightly injured. The mine destroyed one tire, the wheel and the engine oil pan. The charge was estimated at 30 pounds.

(c) On 16 January a $\frac{1}{4}$ ton was struck by a command detonated anti personnel mine believed to be locally produced of a type similar to a claymore. This resulted in the death of the driver and the injury of the platoon leader and a passenger. The vehicle was slightly damaged.

(d) On 18 January another 290M tractor detonated a second mine in the same laterite pit as the incident on 15 January. The mine was the same type believed to be cast TNT or Plastic explosive. No parts of the mine or primer were found. No personnel were injured however the tractor was turned in as a combat loss.

(e) On 28 January 1968 a $\frac{1}{4}$ ton traveling down the road was hit in the right front tire by a sniper round causing the driver to lose control of the vehicle. The $\frac{1}{4}$ ton struck a fallen tree, turned over and was severely damaged.

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31 January 1968

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(2) It is concluded that mines that are being implaced by the VC are extremely difficult to detect because of the small amount of metal in the detonator and the iron content in the laterite.

L. Plans, Operations and Training

a. Plans:

(1) All construction management plans for Blackhorse Airfield and LTL-2 were developed by the project officers within the company. This is unique because of the special role that the 591st has as a construction unit rather than just an equipment support unit.

(2) Planning is underway to set up a rock crusher at Black Horse to produce concrete aggregate and to train new personnel. Rock will be imported from Gia Ray.

(3) A new project to construct a parking apron for the Xuan Loc airfield is now in the planning stages.

b. Cantonement construction activities.

(1) The company provided equipment and operators to A Company 27th Engineer Battalion (C) for the construction of drainage structures and horizontal construction.

(2) Equipment, operators, and supervisors were provided to D Company for the construction of minimum essential requirements for an assault helicopter company at Black Horse. Equipment and operators were also provided for the construction of water wells and fill stands.

(3) Equipment and personnel continued to be attached to B Company for the airfield rehabilitation at Phu Quoc Island.

(4) The company provided on a weekly basis low beds and operators for logistical convoys organized by the 27th Engineer Battalion (C) S-4.

c. Earthwork Construction

(1) The company completed the earthwork for the upgrading of the existing airfield at Xuan Loc to type III C-130. The asphalt section then surfaced the strip using RC-800 and sand in a single surface treatment. The project required the following:

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Man Hours:	7,068
Equipment Hours:	4,793
Laterite:	60,530 yds ³
RC-800 Asphalt:	15,850 gal
Peneprime:	5,775 gal

(2) The company completed construction of the type II C-123 airfield at Black Horse RVN. Earthwork was completed by the First Equipment Platoon and the double surface treatment asphalt surface was applied by the Support Platoon. The project required the following:

Man Hours:	4,927
Equipment Hours:	3,596
Earth Moved:	34,669 yd ³
RC-800 Asphalt:	29,950 gal
Reck 3/4" (-)	507 yd ³
Reck 3/8" (-)	315 yd ³

The project was started on 30 October and completed on 30 December 1967.

(3) The company began full scale operation on the upgrading of lines of communication (LOC) during this reporting period. The upgrading included LTL-2 between Black Horse and CL-1 and QL-1 between LTL-333 and LTL-2. The 591st was assigned the former project and was supported by elements of A Company 27th Engineer Battalion (C). The latter project was assigned to C Company 27th Engineer Battalion (C) supported by one platoon of the 591st. On both projects the role of the 591st was the same. All earthwork and surfacing were accomplished and supervised by officers of the 591st Engineer Company. This type of work is a unique utilization of a light equipment company and has worked extremely well. There have been no coordination problems and the work effort has progressed very well. The alternative to this type of utilization is to assign all projects to the line companies and have this unit dispatch equipment to them. This does not work as well. The light equipment company supervisors are more knowledgeable of the equipment capabilities and therefore make better utilization of it.

(4) Elements of the third Equipment platoon was assigned the project of constructing minimum essential requirements for a fire support base. . . . The project called for clearing 30-35 acres of trees, constructing defensive ~~bars~~, ammunition storage areas, interior roads and gun pads. The equipment and operators moved more than 35,000 yd³ of material in 14 days.

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d. Operational Support

(1) The company supported the 27th Engineer Battalion (C) during Operation Sante Fe conducted by the 9th Infantry Division.

(2) The 591st supported A Company 27th EBC in the rehabilitation of the Tanh Linh Airfield, YT 935260. This was a project which involved borrowing light weight equipment from the ARVN Engineers and another light equipment company. The equipment which included two D-4 tractors, a track mounted scoop loader, three 2½ ton dump trucks and a towed grader was airlifted by CH-54 helicopter to the project sight. Operators from the company processed the equipment for shipment and accompanied it to the project.

(3) A second airfield at VO DAT (YT 727326) was rehabilitated by A Company 27th EBC supported by equipment and operators from the 591st. This project was completed using TO&E equipment taken to the project by road.

e. Training

(1) Mandatory training during the reporting period was held two hours weekly in which the following subjects were presented.

Geneva Convention
Military Justice
Safety
Character Guidance
Command Information
SAEDA
M-16 Care and Cleaning
Sentry Duty
Map Reading
Familiarization firing of all weapons.

(2) Training and cross training of operators occurred on the job.

5. Logistics: The company encountered few logistical problems during the reporting period. Statistics reveal the following:

a. The P.L.L. has been maintained at 75% - 85% fill throughout the period. Repair parts requisitions were filled at a better rate than during the previous reporting period.

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b. The deadline rate decreased significantly during the reporting period. The unit enjoyed less than 1% deadline for more than 5 weeks. At the end of the reporting period the deadline rate stood at 2%. The drop is attributed to an increased emphasis on operator maintenance and unit pride. The maintenance section played the greatest role in repairing downed equipment. They worked long hours and took pride in their work.

6. Command Management: Control of the units efforts has become much easier since the outlying elements are now much closer than they previously were.

7. Inspector General: The annual General Inspection was scheduled for 10-11 January but was postponed until the monsoon season.

8. Civic Affairs: None

SECTION 2, Part 1, Observations (Lessons Learned)

1. Personnel: None

2. Operations:

a. Item: Laterite on a road surface

Discussion: This unit has found that while upgrading the roads it has become necessary to construct much of the surface out of laterite because the existing asphalt and rock surface has completely deteriorated. Laterite does not have much strength as a wearing course even though it is structurally quite satisfactory. The surface disintegrates into a fine powder which causes a severe and dangerous dust problem.

Observation: When upgrading the roads in areas where the existing surface has to be completely replaced it was found that by scarifying the top four inches of the existing rock surface and spreading it over the newly constructed laterite base course, that a stable surface can be achieved. By applying water to the new surface the traffic forces the rock into the laterite. The surface then is highly stable and dust is significantly reduced.

b. Item: Obtaining smooth surface on double surface asphalt treatment

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Discussion: The process used in the application of the surface treatment at Black Horse airfield after preparing the earth surface sub-course consisted of applying RC-800 at the rate of 0.60 gallons per square yard, applying 3/4" (-) aggregate at 50 lbs per square yard, brooming with a drag broom, rolling with ten ton steel wheel roller and allowing 5 days curing time. The second phase consisted of applying RC-800 at 0.30 gallons per square yard, applying 3/8" minus rock at 25 pounds per square yard and following the same steps as with the first treatment. The aggregate spreading operation was hampered some what by the amount of larger pieces of foreign material in the rock. As the spreader was spreading the rock the resulting surface had ridges in it. When the roller passed over it the surface would be uneven.

Observation: It is most important that immediately after the rock is spread it must be drag broomed and then hand broomed to get the uncompacted surface as smooth as possible. After compaction the surface is then smooth and level.

c. Item: Water Distributors

Discussion: During the dry season laterite requires large amounts of water in order to obtain proper compaction. It has been found that 1,250 gallon water distributors are not sufficient to stay ahead of the earthmoving equipment. Evaporation takes place so quickly that projects are slowed to an unacceptable level.

Observation: In order to solve the water problem the 591st obtained two unserviceable 5,000 gallon oil tank trucks and attached spray bars. These were used as water distributors and have worked extremely well.

SECTION 2, Part 2 Recommendations

1. Personnel: None

2. Operations: The 591st has been assigned projects to plan and execute and provided with support from the line companies. This has resulted in a highly professional organization and a high state of morale within the unit. I therefore have only to recommend that the company continue to be employed in this manner.

3. Training and Organization: None

4. Intelligence: None

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5. Logistics: None

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